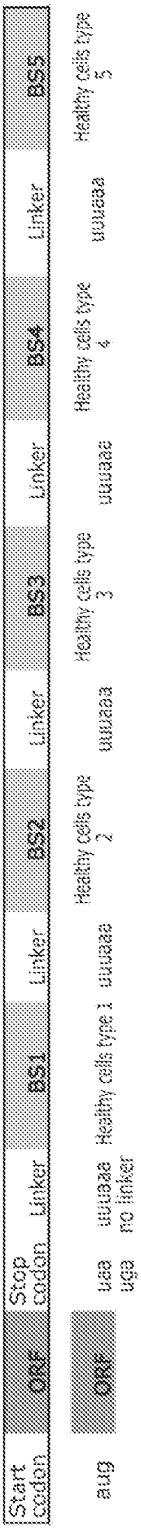

Start codon
ORF
Stop codon
Linker
BS1
Linker
BS2
Linker
BS3
Linker
BS4
Linker
BS5
aug
ORF
uaa
uga
uag
no stop codon
uuuaaa
no linker
Healthy cells type 1
uuuaaa
Healthy cells type 2
uuuaaa
Healthy cells type 3
uuuaaa
Healthy cells type 4
uuuaaa
Healthy cells type 5

Figure 1

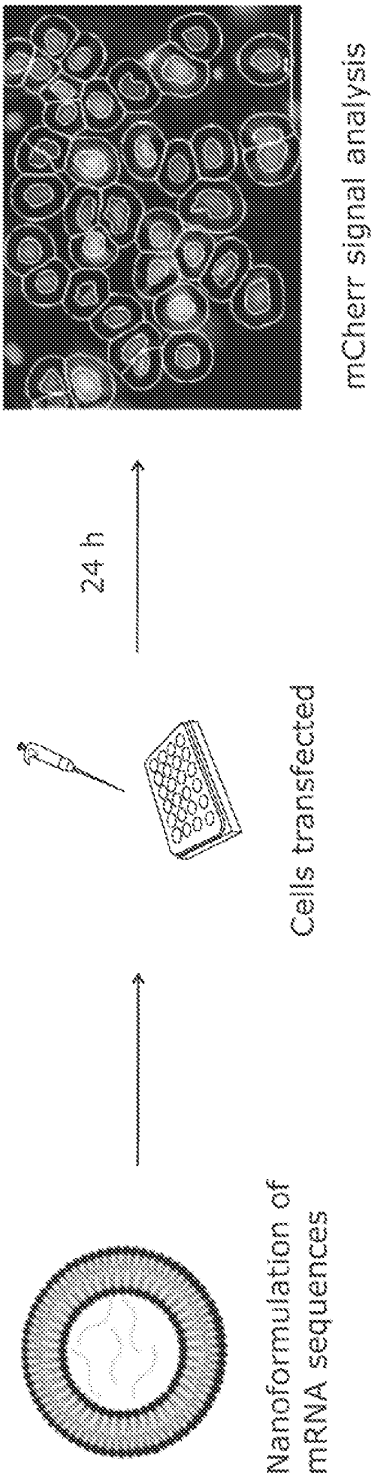

Nanoformulation of mRNA sequences
Cells transfected
24 h
mCherr signal analysis

Figure 2

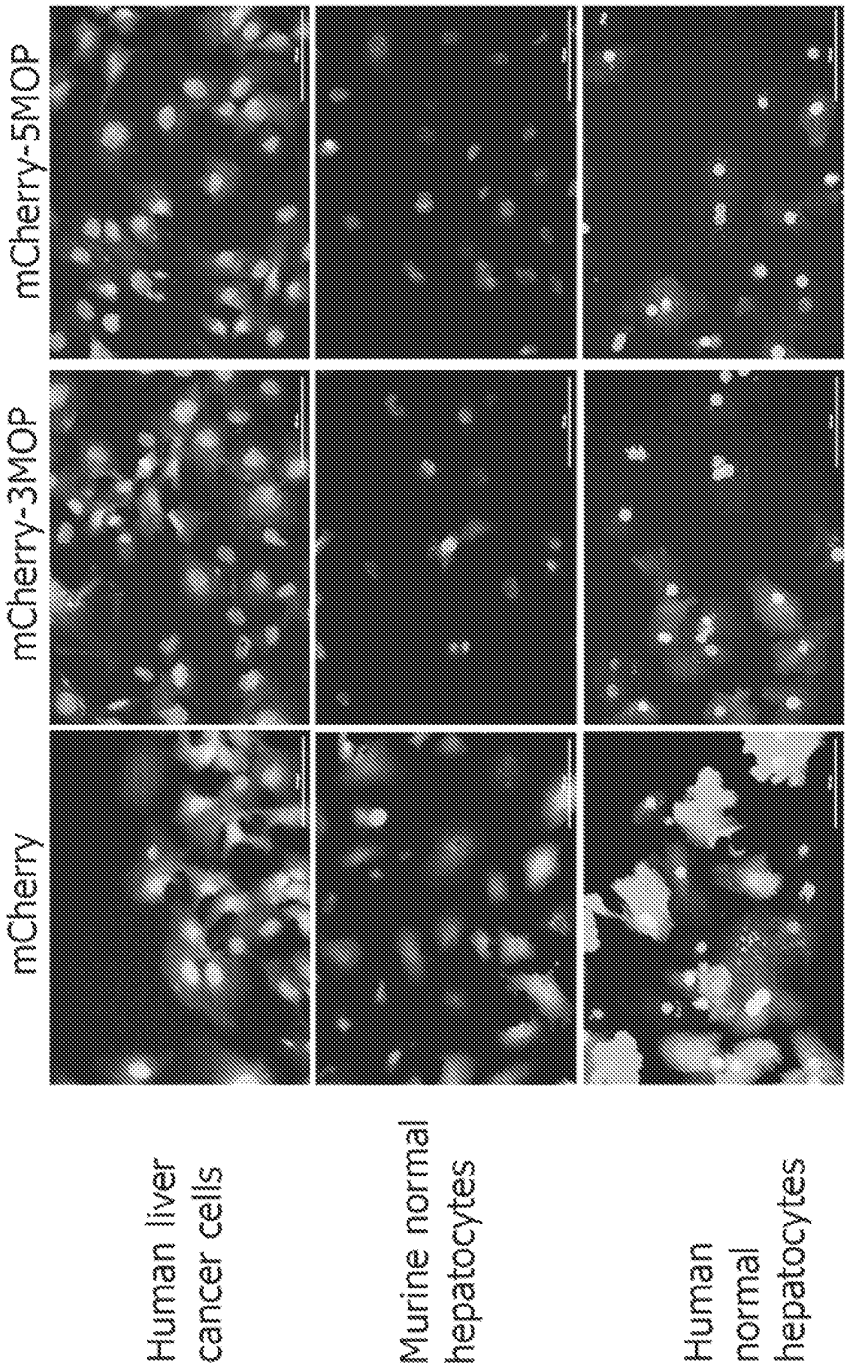

mCherry
mCherry-3MOP
mCherry-5MOP
Human liver cancer cells
Murine normal hepatocytes
Human normal hepatocytes

Figure 3

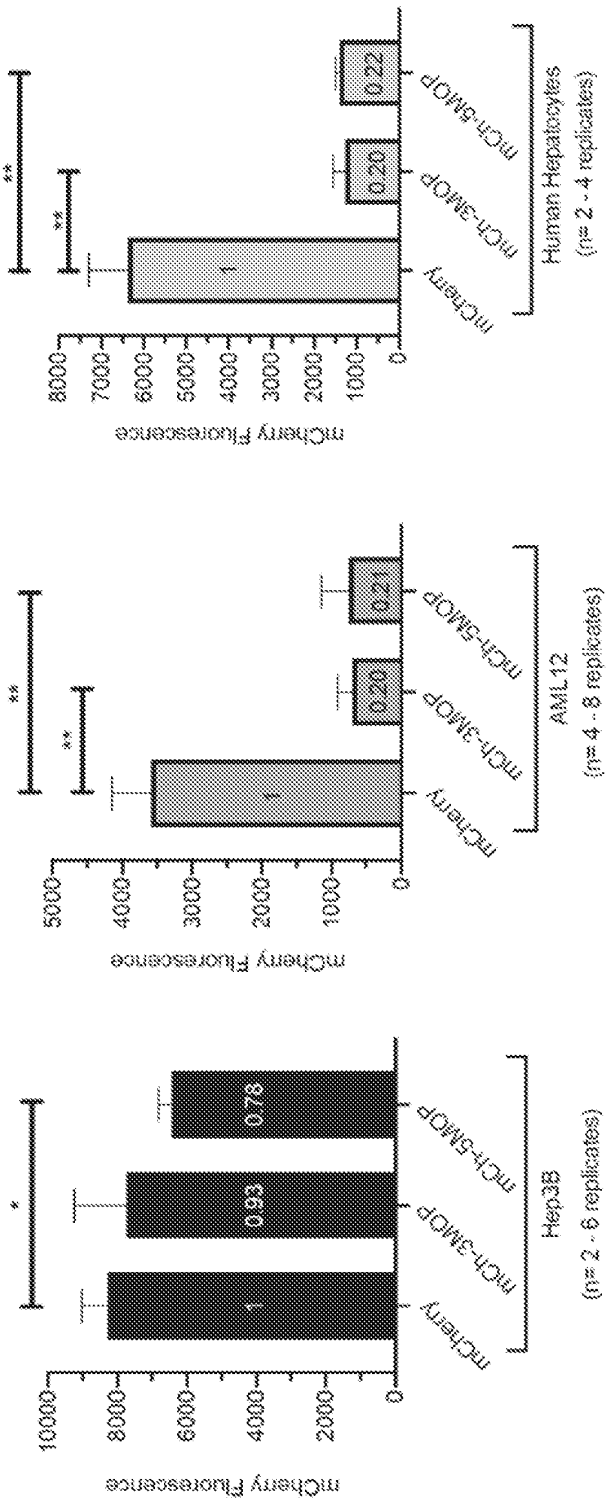

mCherry Fluorescence
8000
7000
6000
5000
4000
3000
2000
1000
0
**
**
1
0.20
0.22
mCherry
mCh-3MOP
mCh-5MOP
Human Hepatocytes
(n= 2 - 4 replicates)
mCherry Fluorescence
5000
4000
3000
2000
1000
0
**
**
1
0.20
0.21
mCherry
mCh-3MOP
mCh-5MOP
AML12
(n= 4 - 8 replicates)
mCherry Fluorescence
10000
8000
6000
4000
2000
0
*
1
0.93
0.78
mCherry
mCh-3MOP
mCh-5MOP
Hep3B
(n= 2 - 6 replicates)

Figure 4

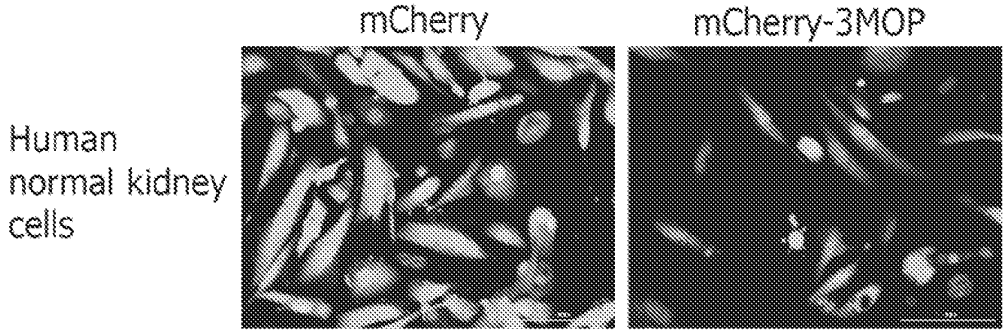


Figure 5(a)

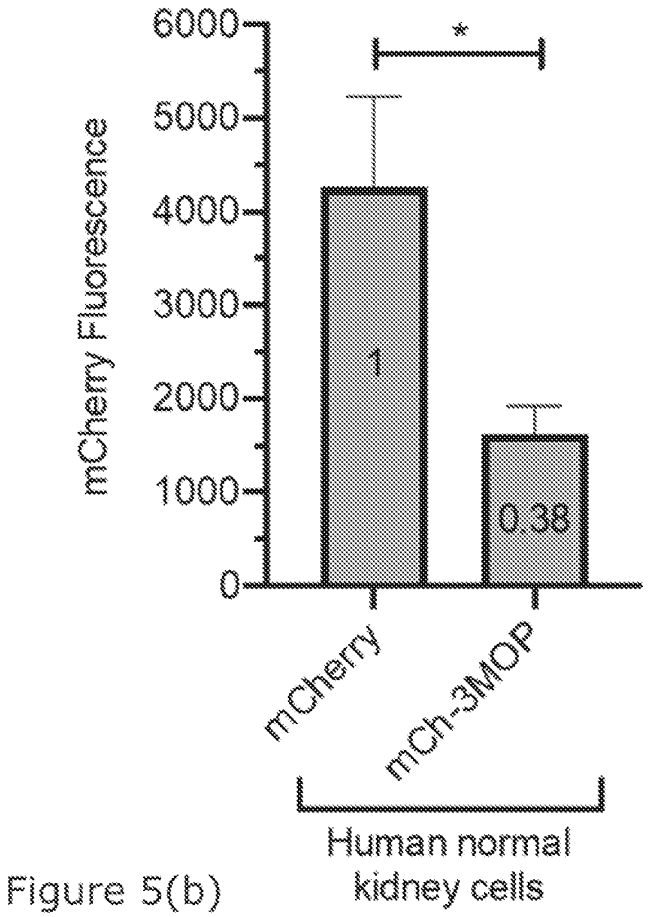


Figure 5(b)

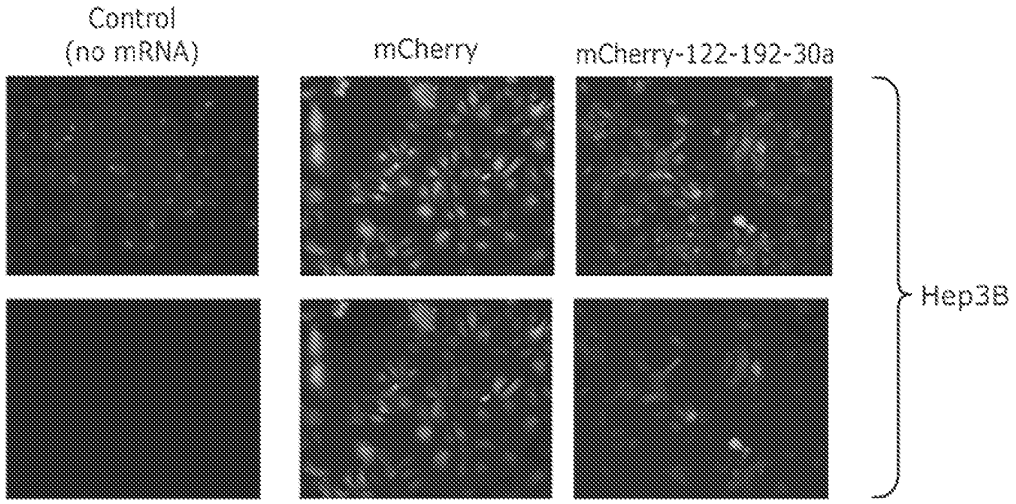


Figure 6(a) Figure 6(b) Figure 6(c)

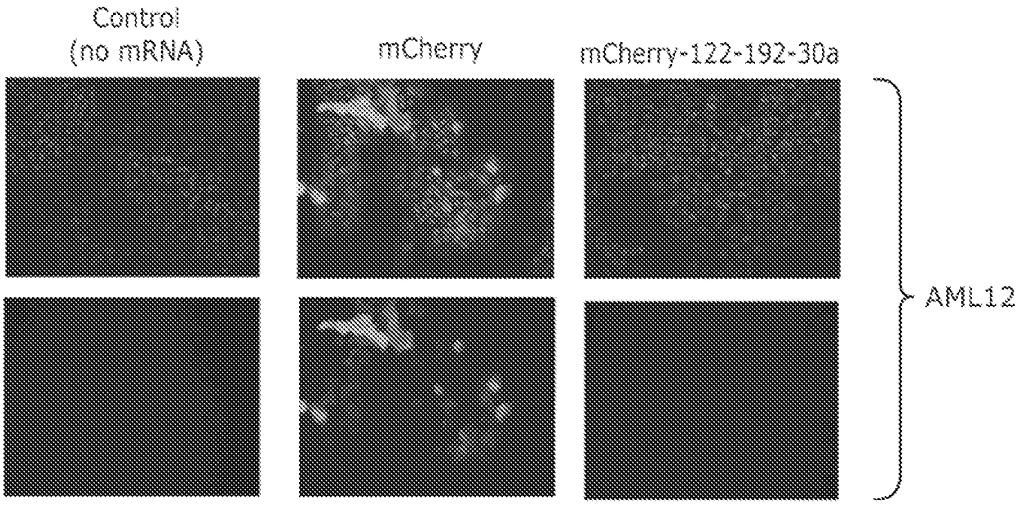


Figure 6(d) Figure 6(e) Figure 6(f)

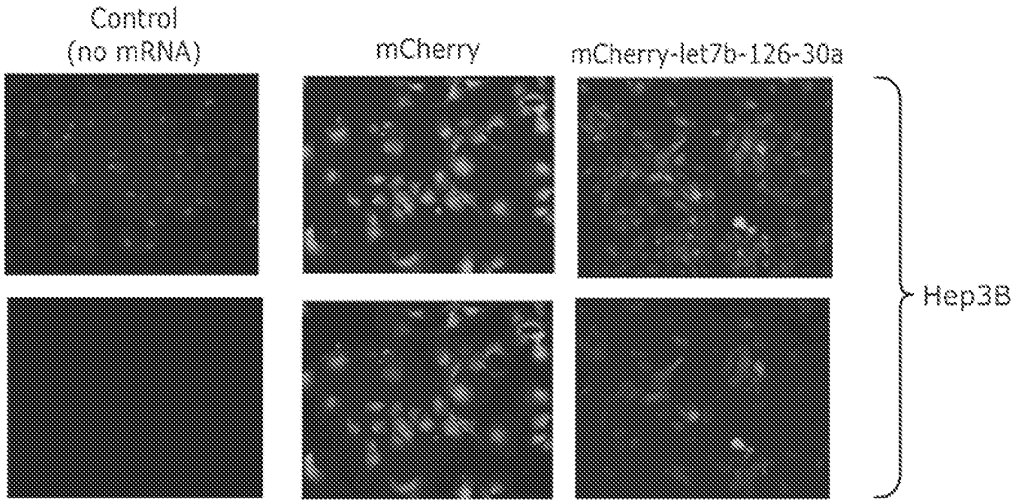


Figure 7(a) Figure 7(b) Figure 7(c)

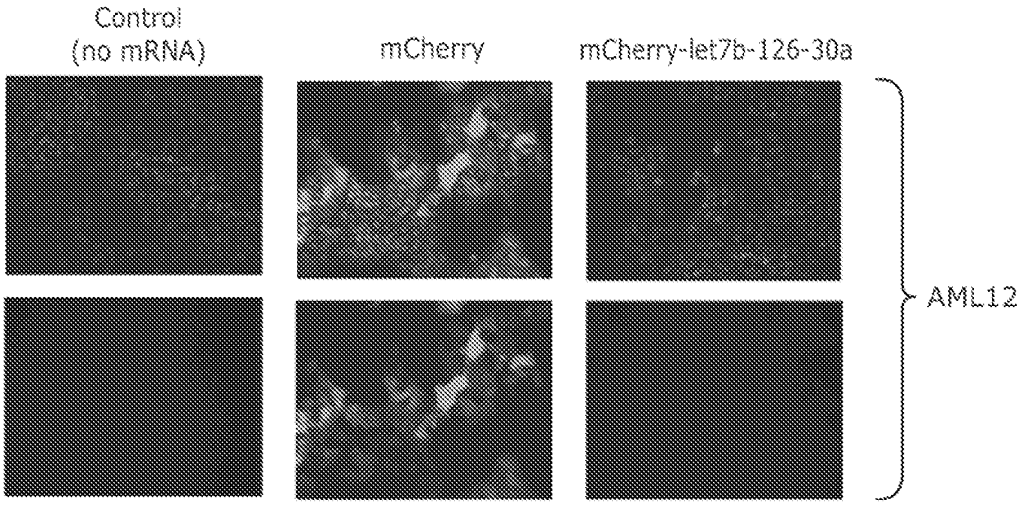


Figure 7(d) Figure 7(e) Figure 7(f)

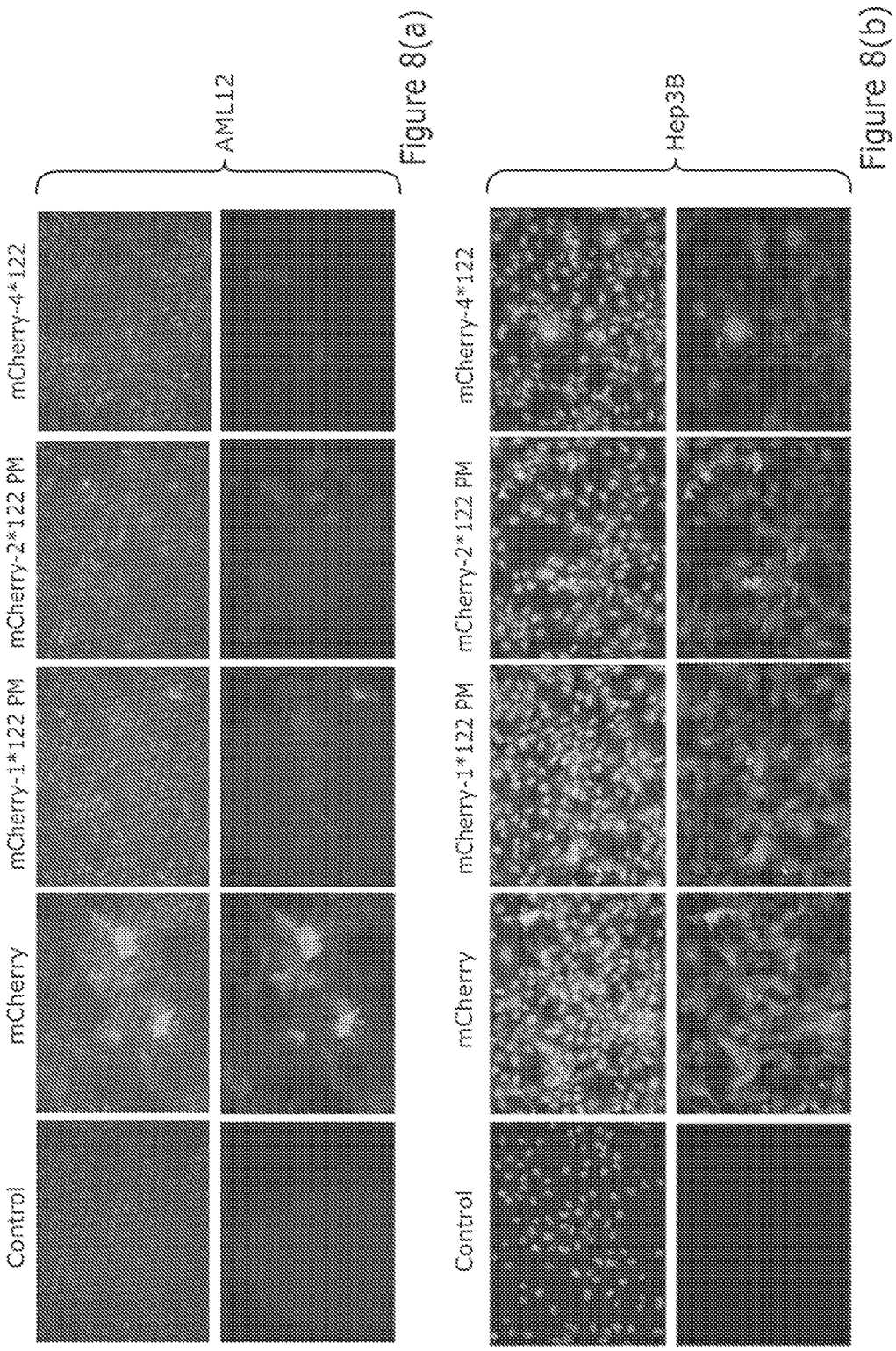


Figure 8(a)

Figure 8(b)

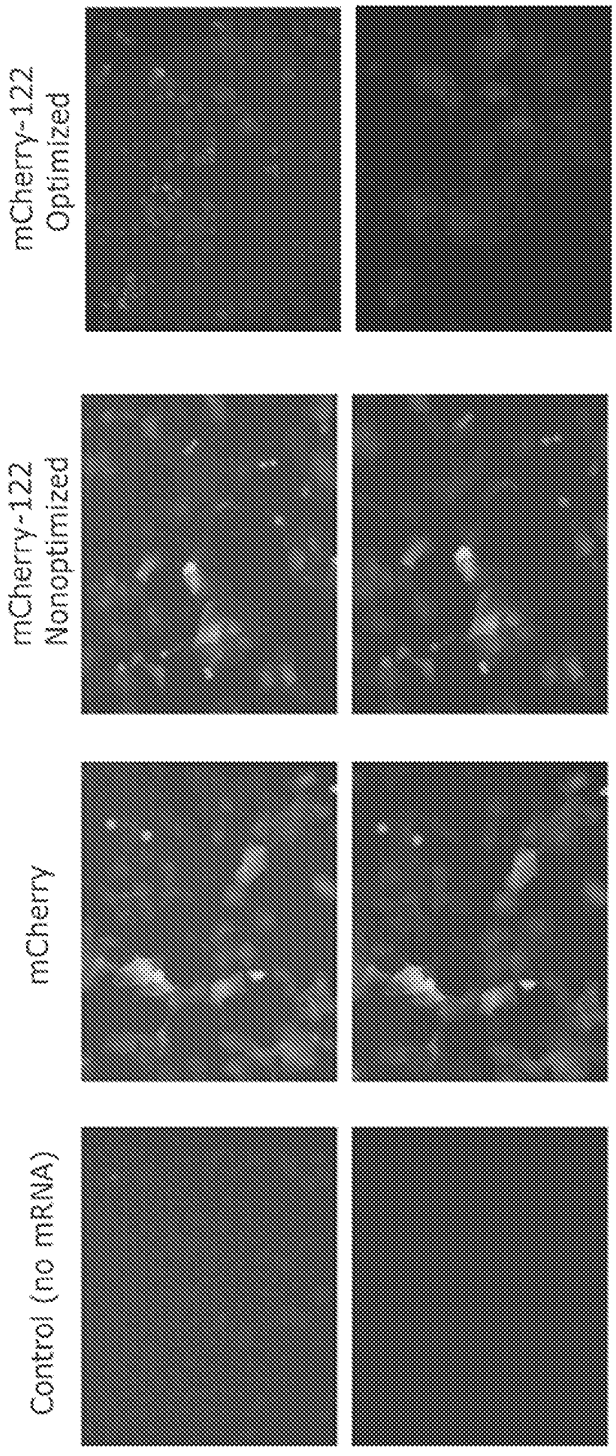


Figure 9(a) Figure 9(b) Figure 9(c) Figure 9(d)

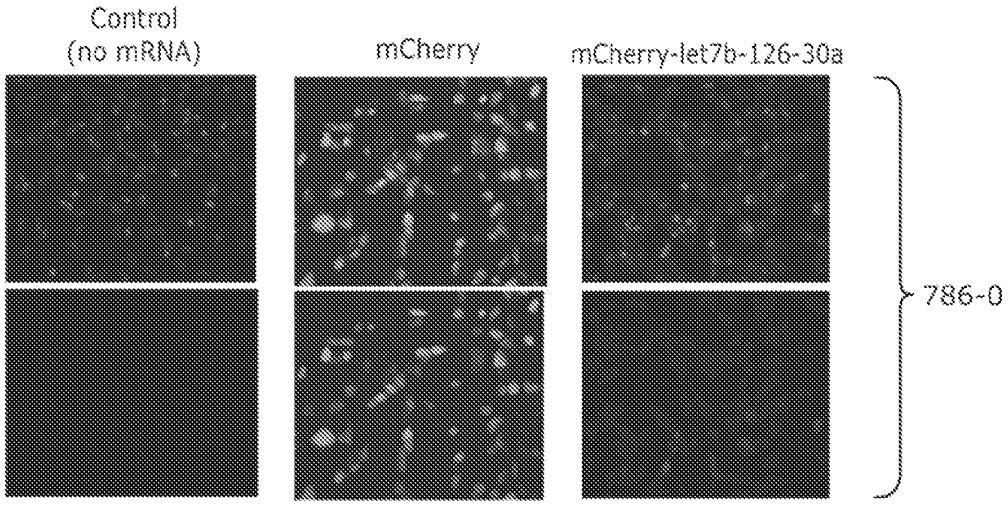


Figure 10(a) Figure 10(b) Figure 10(c)

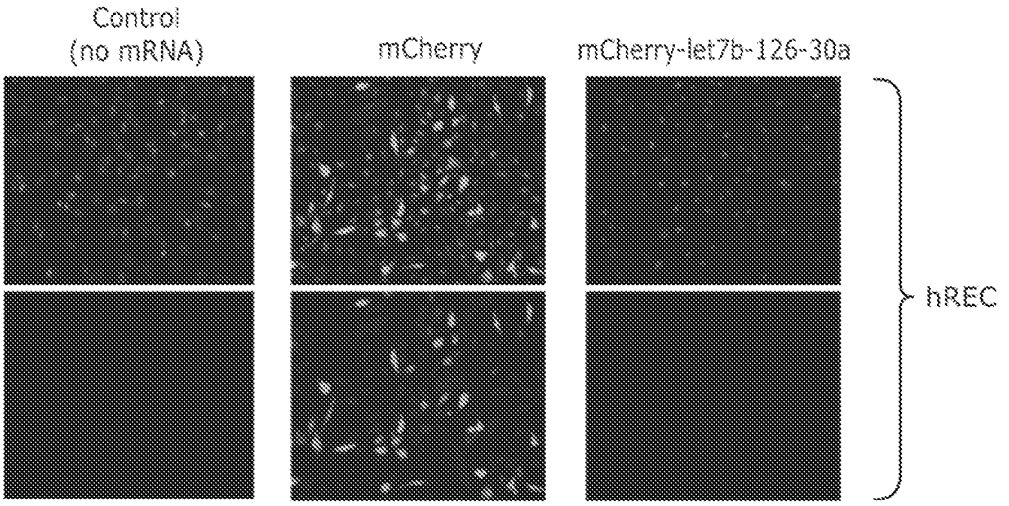


Figure 10(d) Figure 10(e) Figure 10(f)

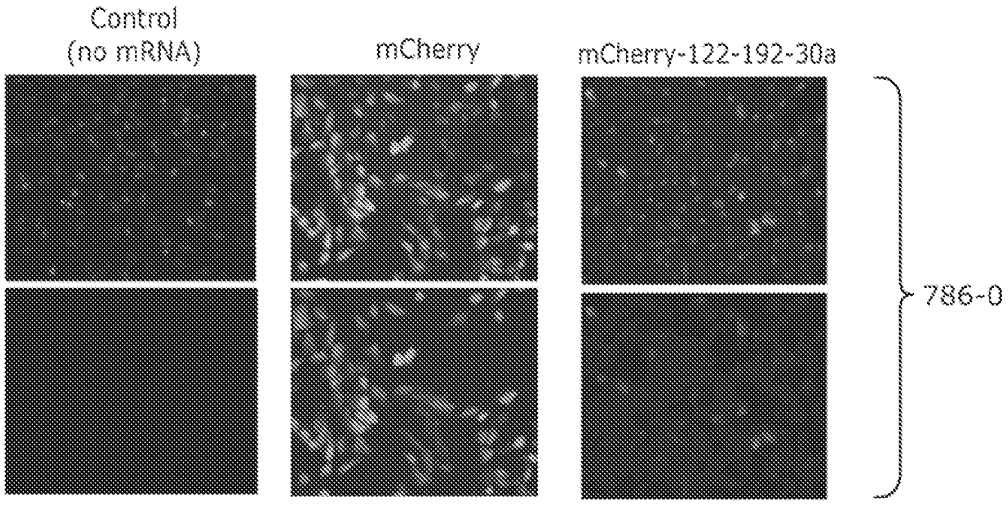


Figure 11(a) Figure 11(b) Figure 11(c)

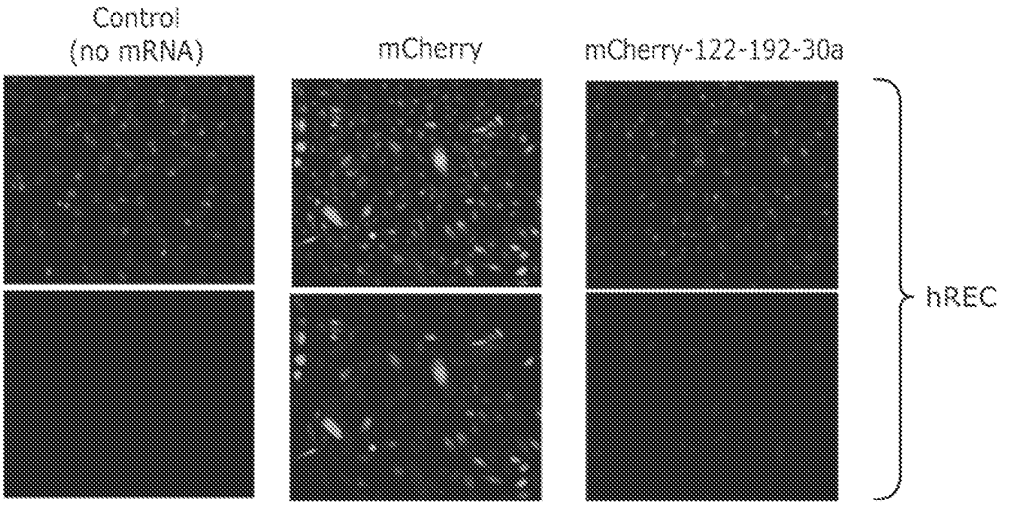


Figure 11(d) Figure 11(e) Figure 11(f)

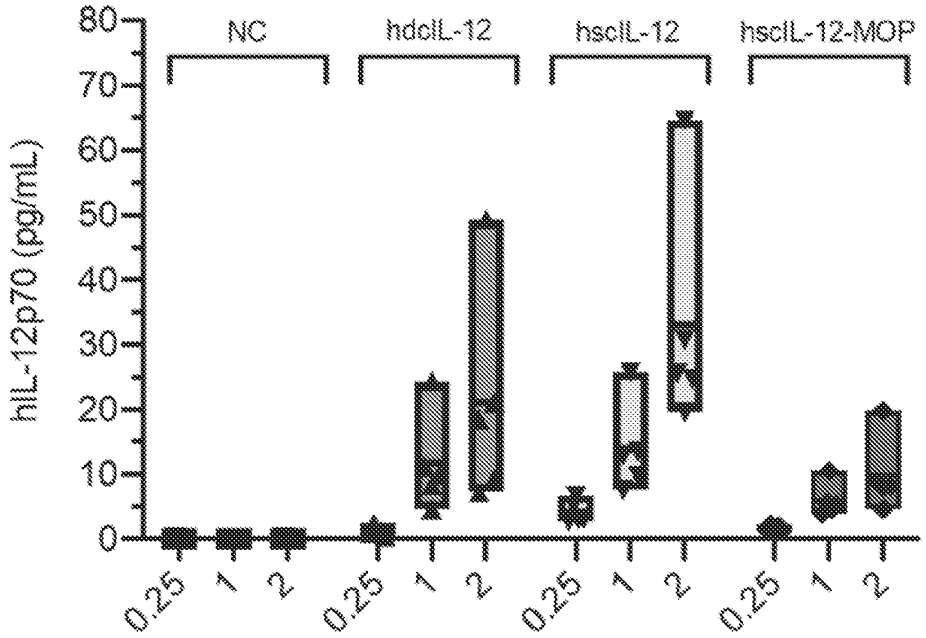


Figure 12(a)

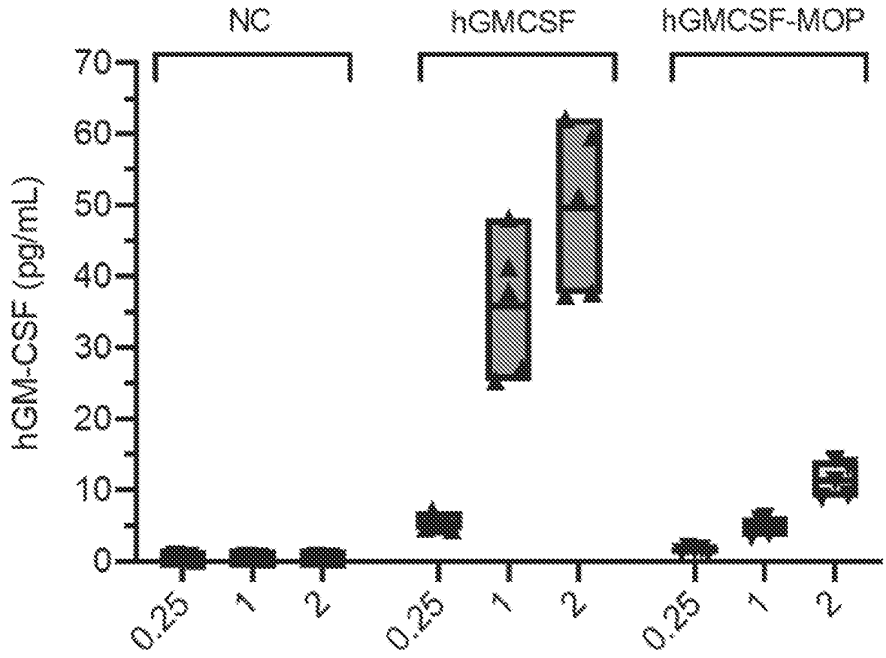


Figure 12(b)

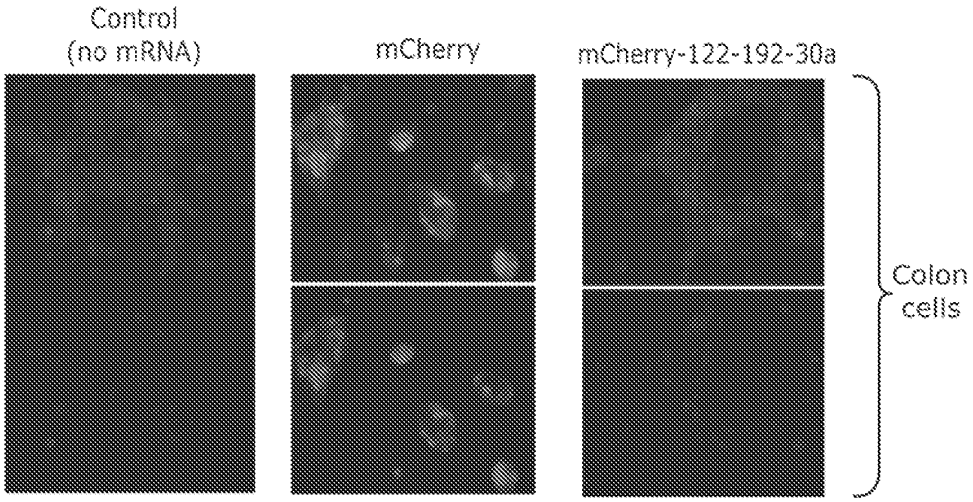


Figure 13(a) Figure 13(b) Figure 13(c)

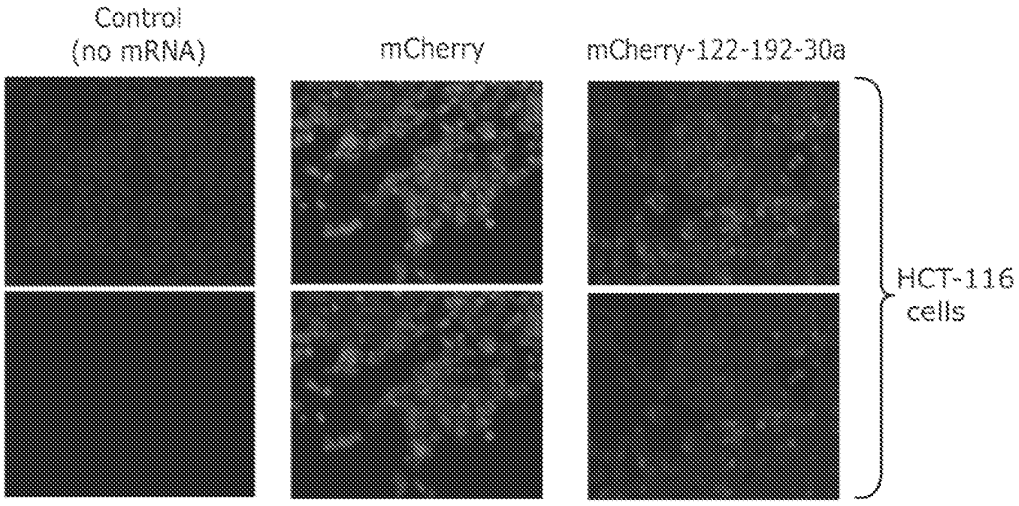


Figure 13(d) Figure 13(e) Figure 13(f)

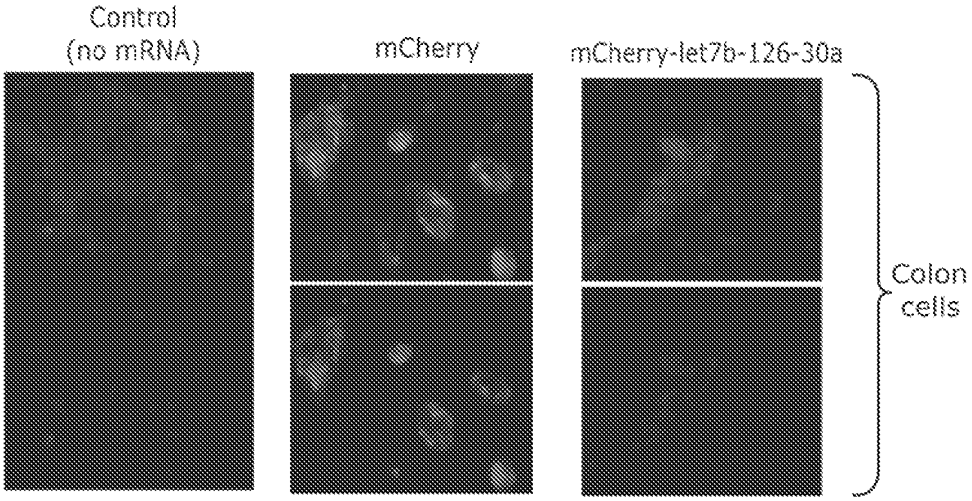


Figure 14(a) Figure 14(b) Figure 14(c)

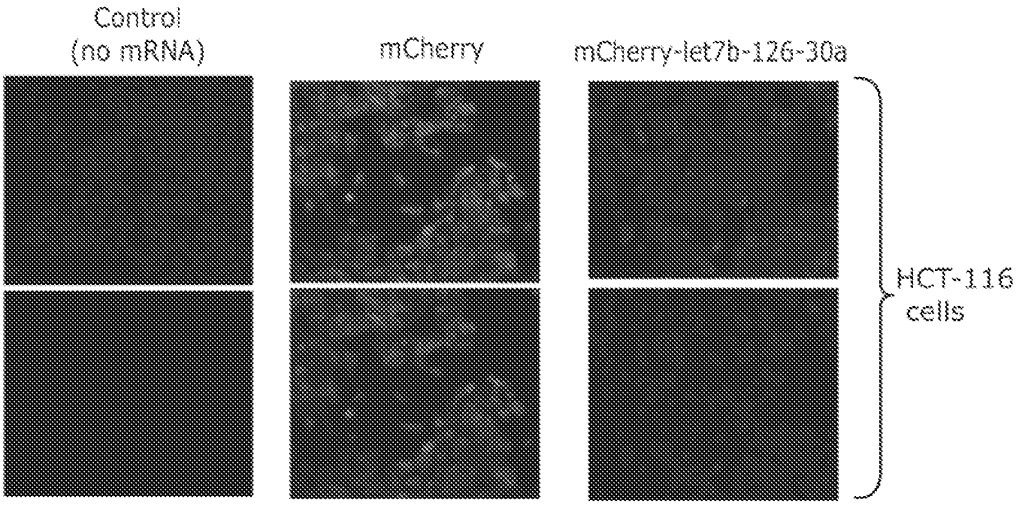


Figure 14(d) Figure 14(e) Figure 14(f)

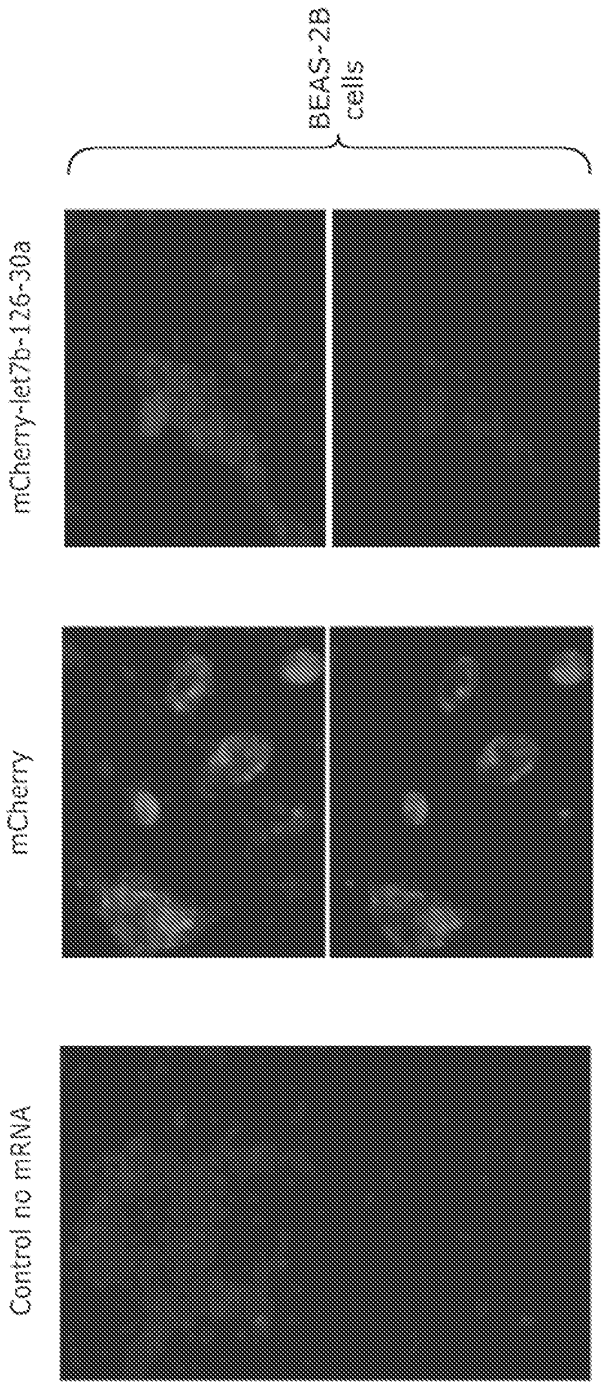


Figure 15(c)

Figure 15(b)

Figure 15(a)

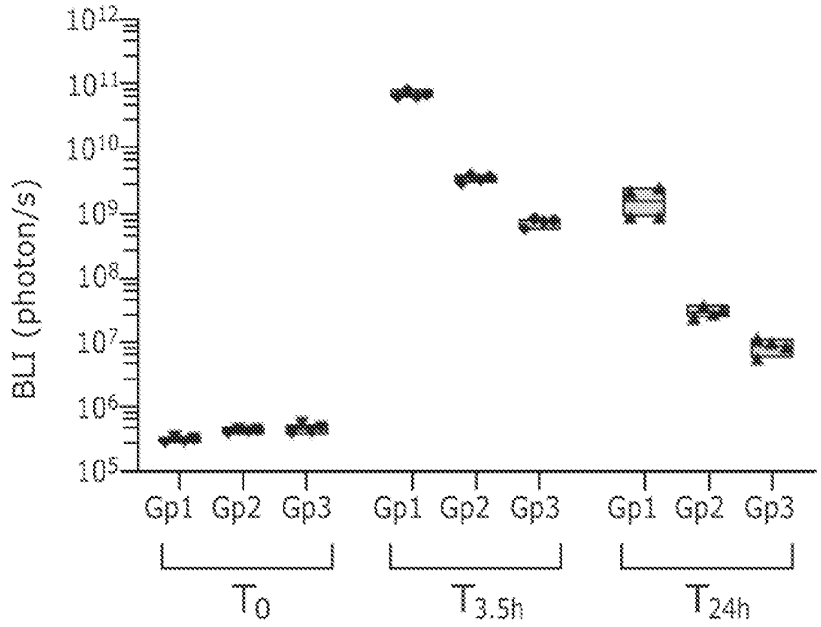


Figure 16(a)

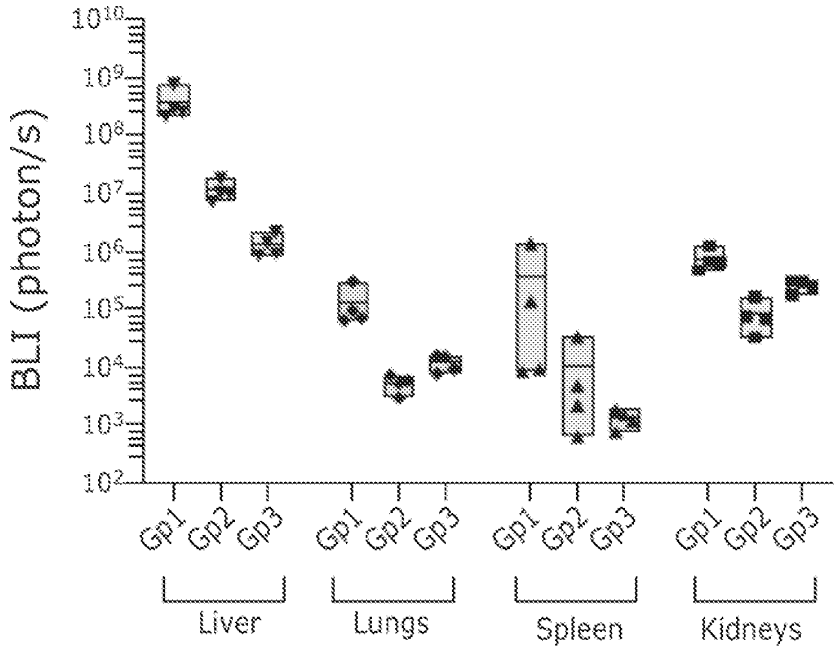


Figure 16(b)

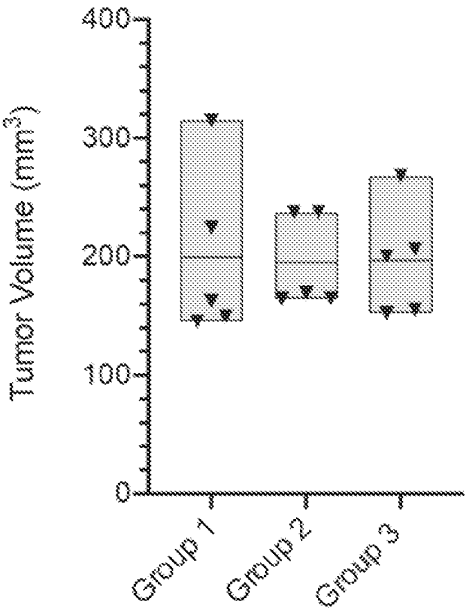


Figure 17(a)

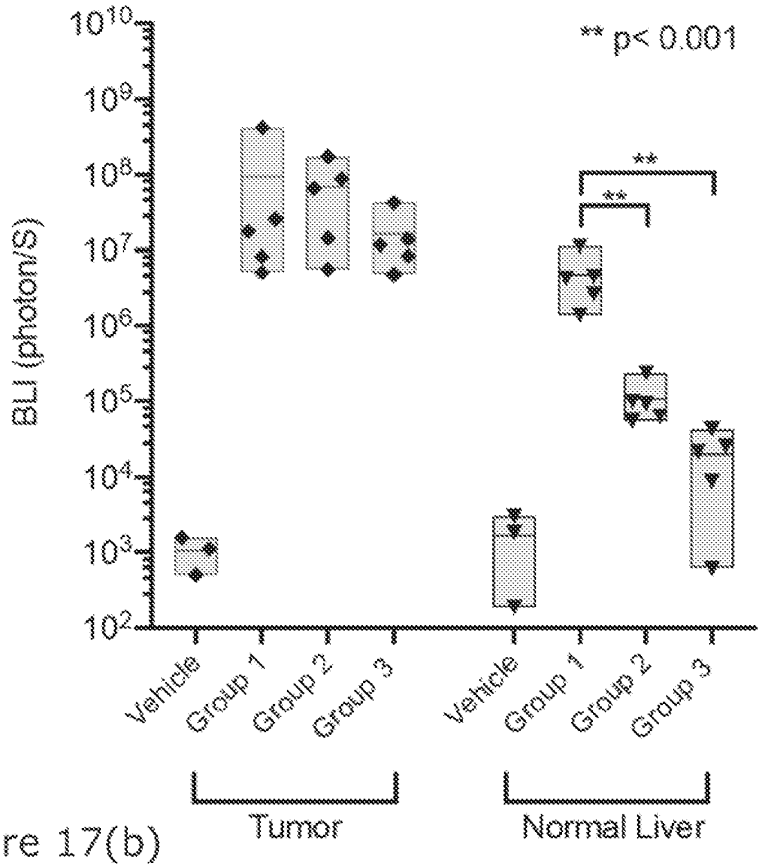


Figure 17(b)

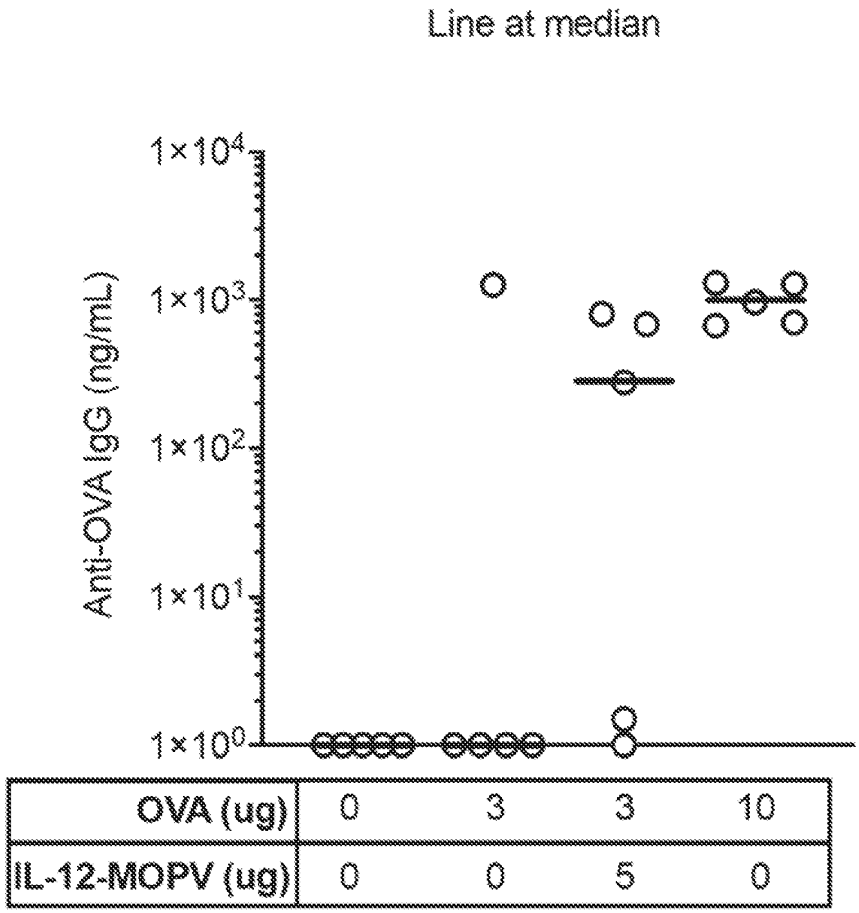

Line at median
Anti-OVA IgG (ng/mL)
1×10^4
1×10^3
1×10^2
1×10^1
1×10^0
OVA (ug) 0 3 3 10
IL-12-MOPV (ug) 0 0 5 0

Figure 18

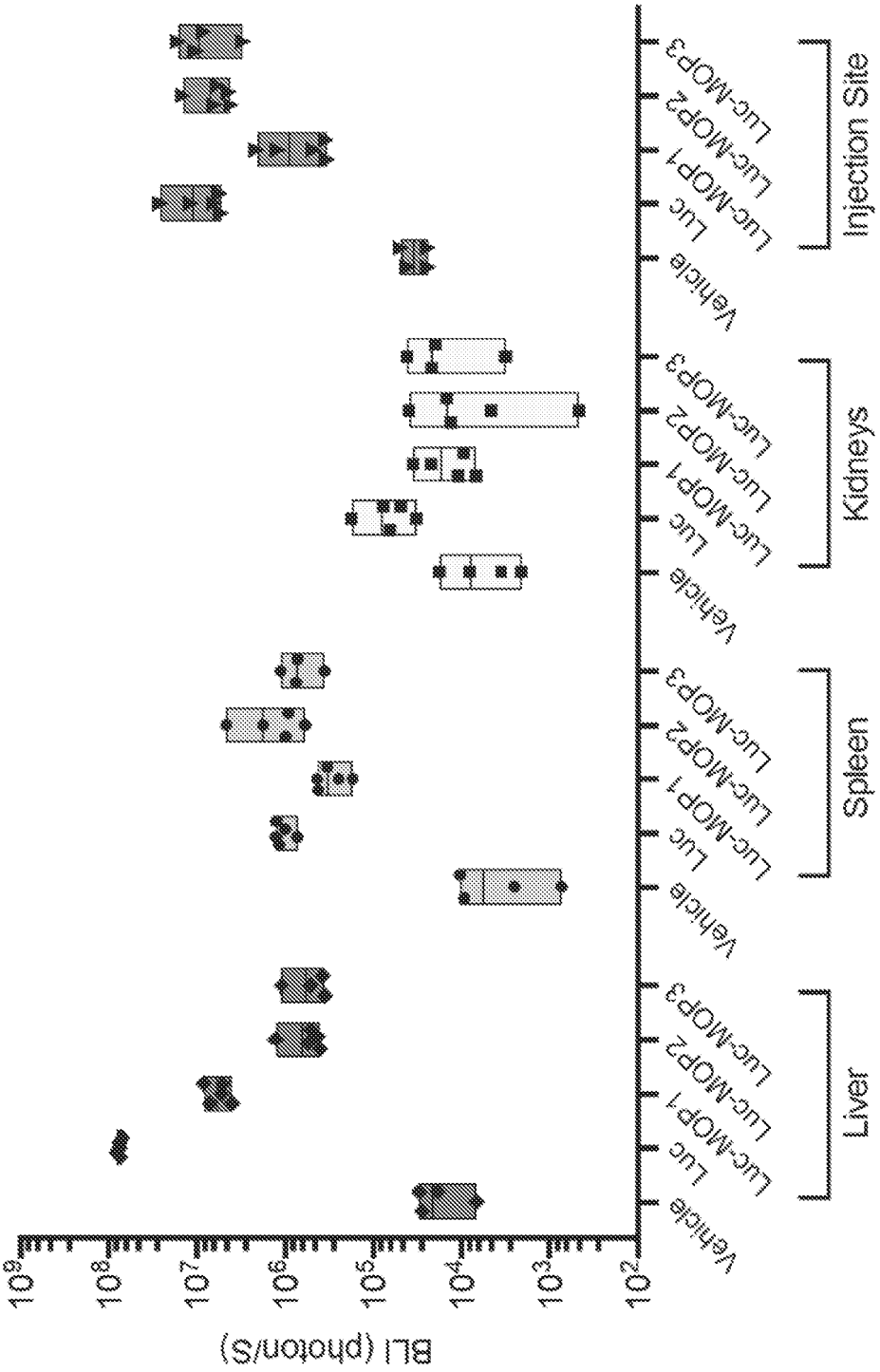

BLI (photon/s)
10^9
10^8
10^7
10^6
10^5
10^4
10^3
10^2
Vehicle
Luc
Luc-MOP1
Luc-MOP2
Luc-MOP3
Liver
Spleen
Kidneys
Injection Site

Figure 19

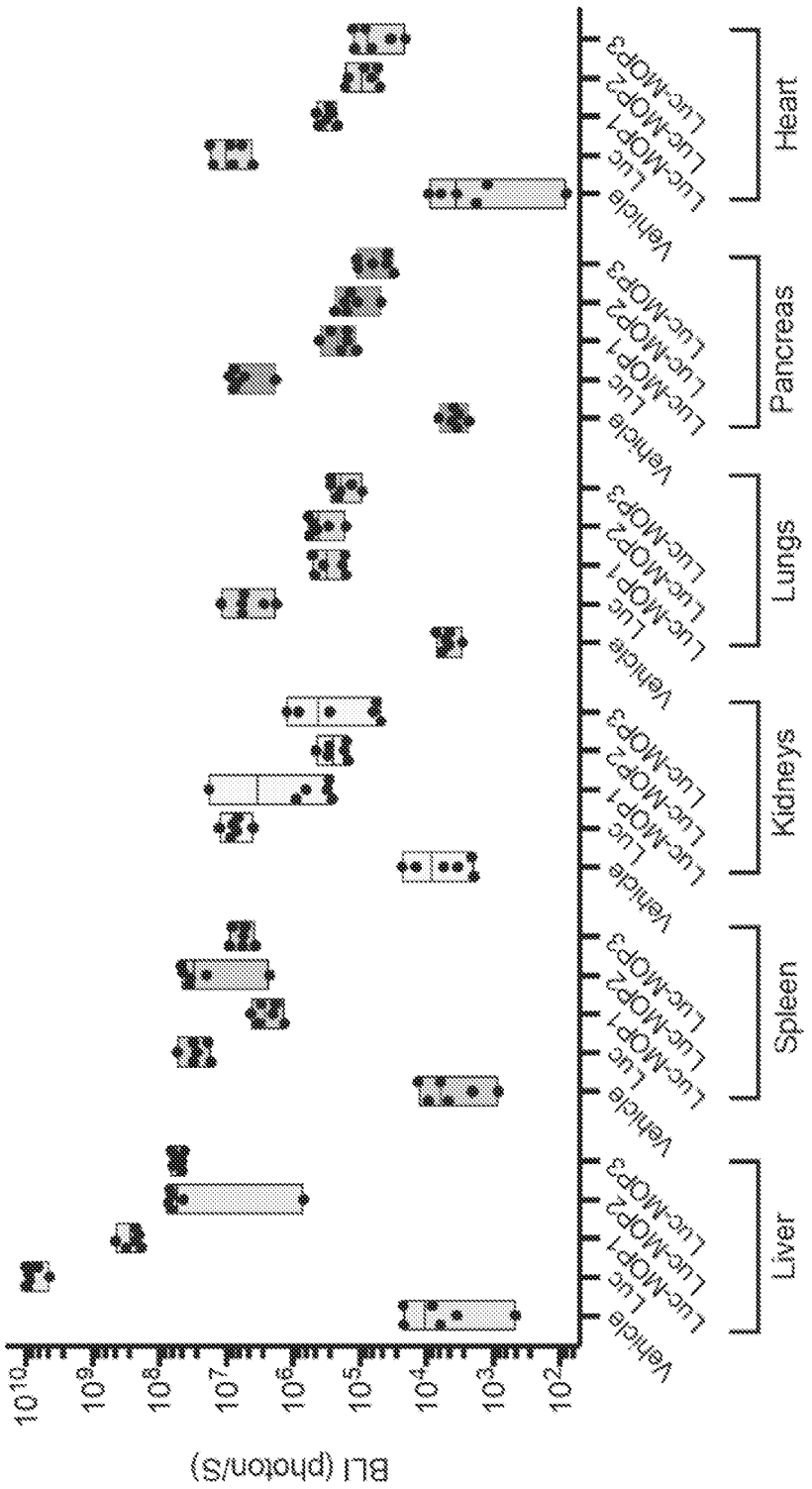

BLI (photon/S)
10^{10}
10^{9}
10^{8}
10^{7}
10^{6}
10^{5}
10^{4}
10^{3}
10^{2}
Liver
Spleen
Kidneys
Lungs
Pancreas
Heart
Vehicle
Luc
Luc-MOP1
Luc-MOP2
Luc-MOP3

Figure 20

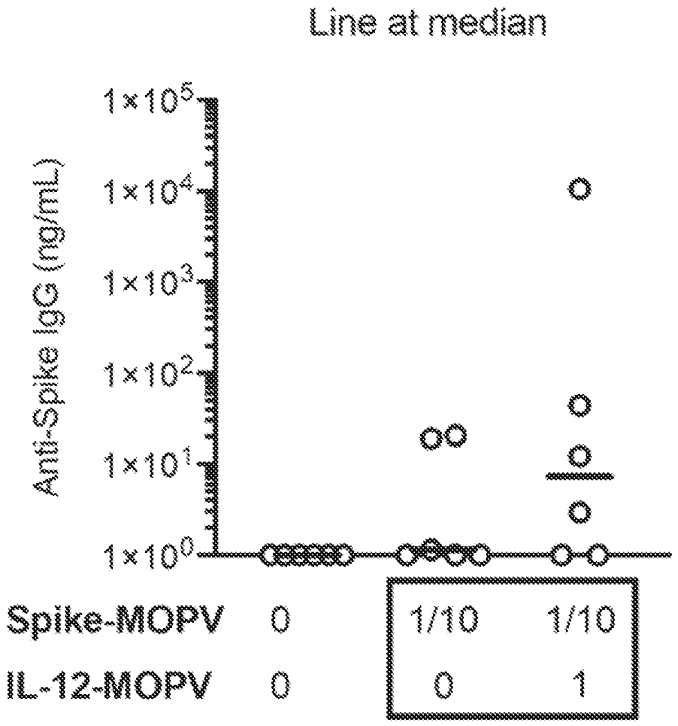

Line at median
Anti-Spike IgG (ng/mL)
1×10^5
1×10^4
1×10^3
1×10^2
1×10^1
1×10^0
Spike-MOPV 0 1/10 1/10
IL-12-MOPV 0 0 1

Figure 21

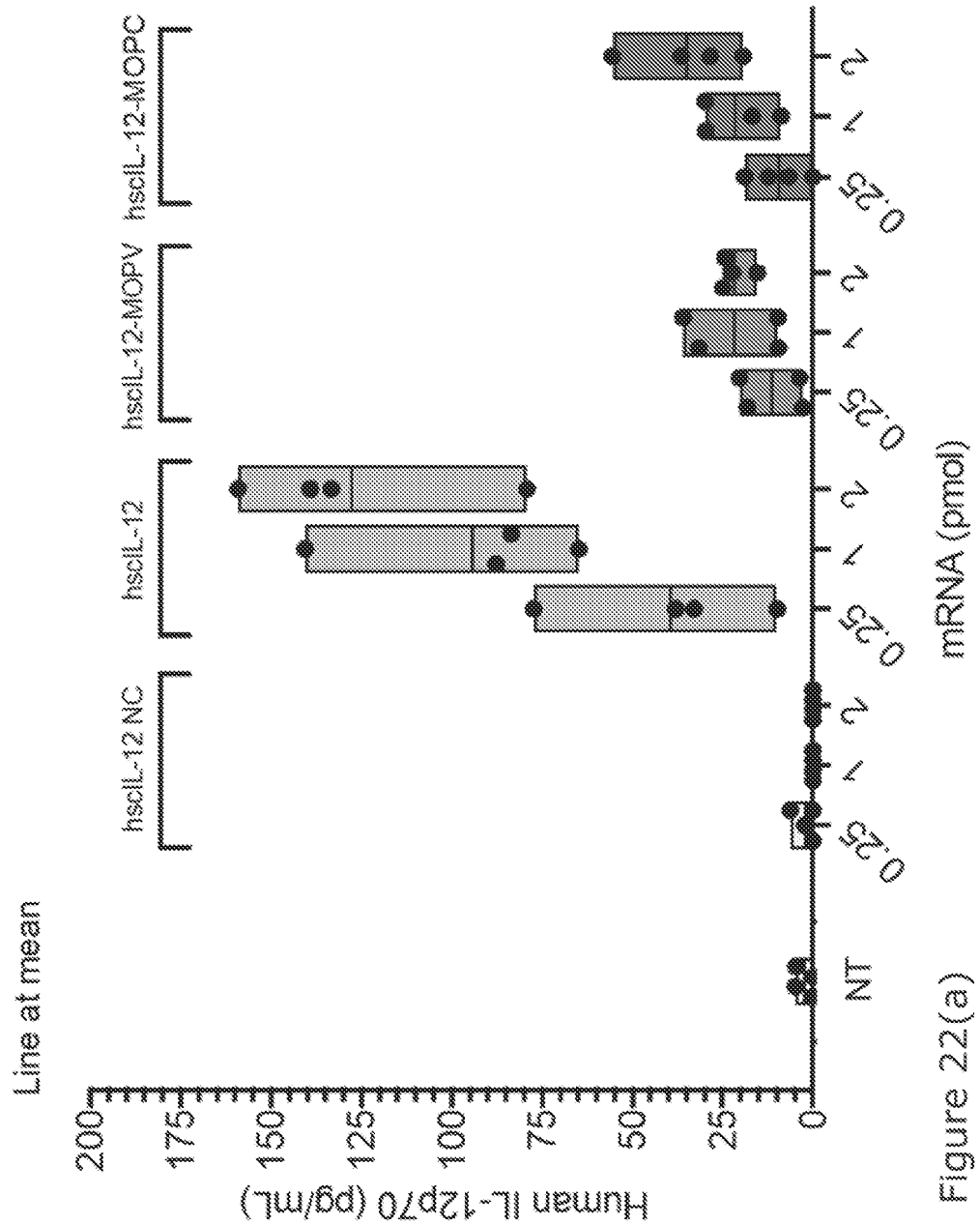

Line at mean
hscIL-12 NC
hscIL-12
hscIL-12-MOPV
hscIL-12-MOPC
Human IL-12p70 (pg/mL)
200
175
150
125
100
75
50
25
0
NT
0.25
0.5
1
2
mRNA (pmol)

Figure 22(a)

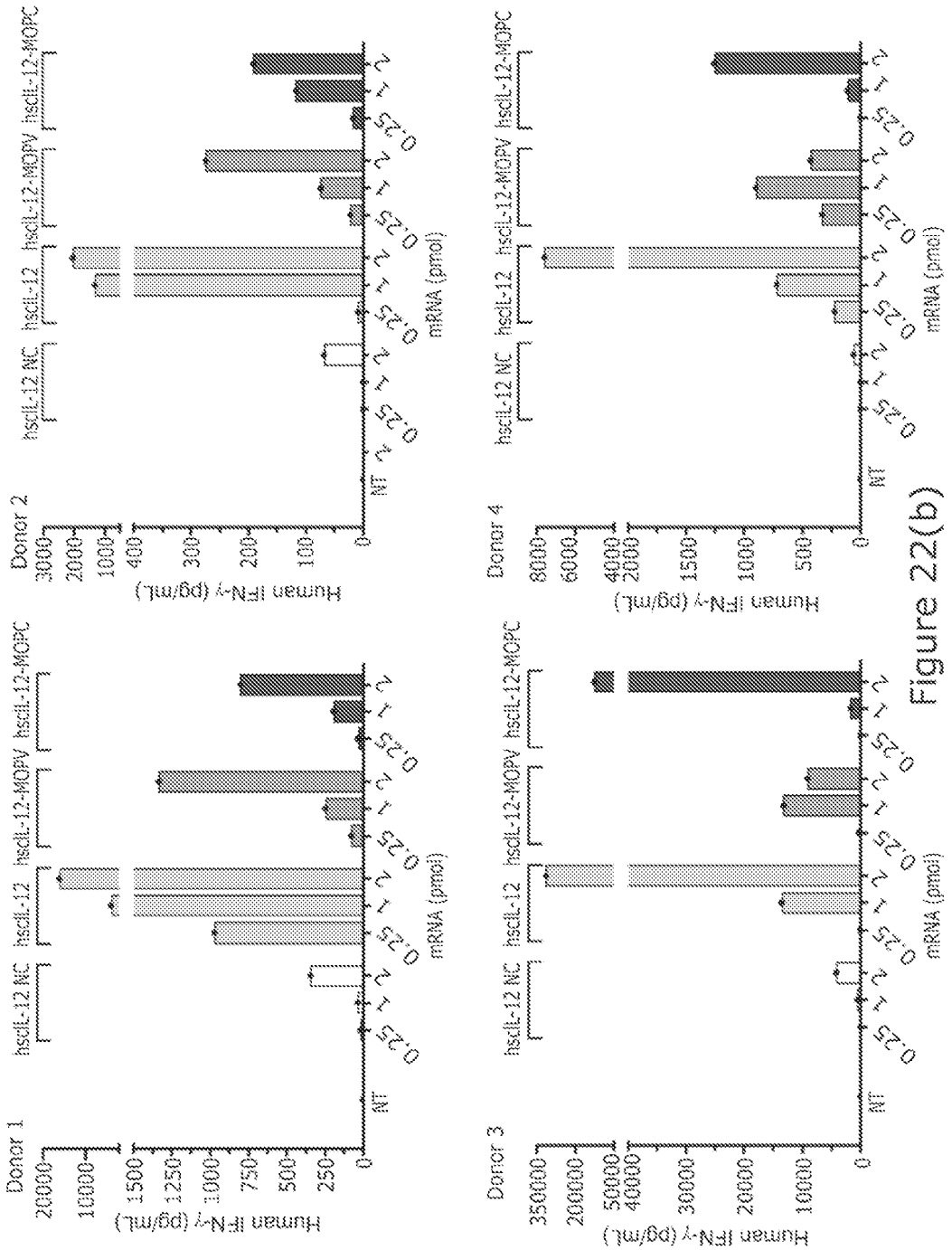
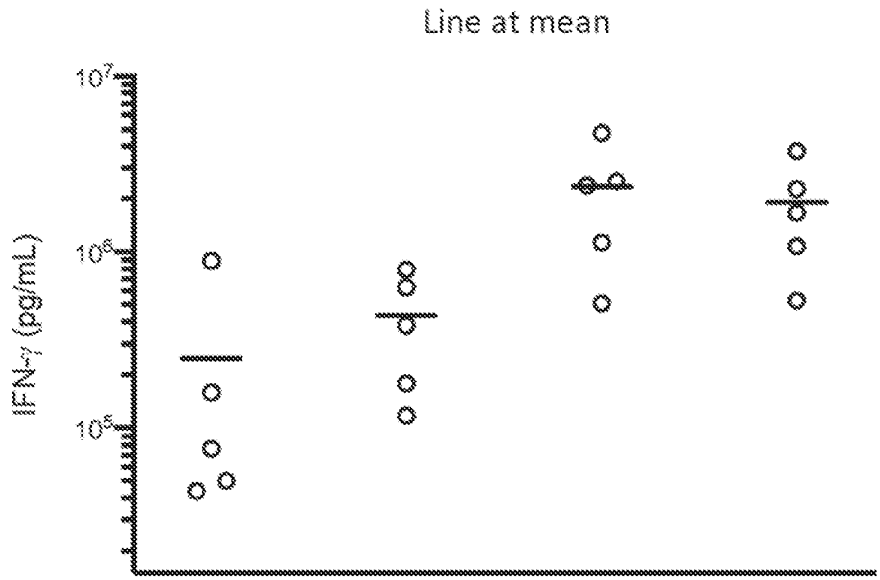

Donor 1
Donor 2
Donor 3
Donor 4
Human IFN-γ (pg/mL)
mRNA (pmol)
hscIL-12 NC
hscIL-12
hscIL-12-MOPV
hscIL-12-MOPC
NT
0
0.25
1
2

Figure 22(b)



Spike-MOPV	0	1	1	1
hscIL-12	0	0	1	0
hscIL-12-MOPV	0	0	0	1

Figure 23